SEQUENCE LISTING

(1) GENERAL INFORMATION:

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  (ii) TITLE OF INVENTION: DNA Mutagenesis by Random Fragmentation
       and Reassembly

 (iii) NUMBER OF SEQUENCES: 62

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   (v) COMPUTER READABLE FORM:
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(2) INFORMATION FOR SEQ ID NO:1:

   (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 20 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: single
      (D) TOPOLOGY: linear

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

AAAGCGTCGA TTTTTGTGAT   20

(2) INFORMATION FOR SEQ ID NO:2:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 20 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

ATGGGGTTCC GCGCACATTT   20

(2) INFORMATION FOR SEQ ID NO:3:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

TTAGGCACCC CAGGCTTT   18

(2) INFORMATION FOR SEQ ID NO:4:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

ATGTGCTGCA AGGCGATT   18

(2) INFORMATION FOR SEQ ID NO:5:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 29 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

AACGCCGCAT GCAAGCTTGG ATCCTTATT   29

(2) INFORMATION FOR SEQ ID NO:6:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 30 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

AAAGCCCTCT AGATGATTAC GAATTCATAT   30

(2) INFORMATION FOR SEQ ID NO:7:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 46 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

TTCTATTGAC GGCCTGTCAG GCCTCATATA TACTTTAGAT TGATTT   46

(2) INFORMATION FOR SEQ ID NO:8:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 56 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TTGACGCACT GGCCATGGTG GCCAAAAATA AACAAATAGG GGTTCCGCGC ACATTT   56

(2) INFORMATION FOR SEQ ID NO:9:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 45 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

AACTGACCAC GGCCTGACAG GCCGGTCTGA CAGTTACCAA TGCTT   45

(2) INFORMATION FOR SEQ ID NO:10:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 44 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

AACCTGTCCT GGCCACCATG GCCTAAATAC ATTCAAATAT GTAT   44

(2) INFORMATION FOR SEQ ID NO:11:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 31 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

AGTTGGGTGG ACGAGTGGGT TACATCGAAC T   31

(2) INFORMATION FOR SEQ ID NO:12:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 33 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

AACCCACTCG TCCACCCAAC TGATCTTCAG CAT   33

(2) INFORMATION FOR SEQ ID NO:13:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 41 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

AGTAAAAGAT GCTGAAGATA AGTTGGGTGC ACGAGTGGGT T   41

(2) INFORMATION FOR SEQ ID NO:14:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 24 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

ACTTATCTTC AGCATCTTTT ACTT   24

(2) INFORMATION FOR SEQ ID NO:15:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 32 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

AAGAGCAACT CAGTCGCCGC ATACACTATT CT   32

(2) INFORMATION FOR SEQ ID NO:16:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 36 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

ATGGCGGCGA CTGAGTTGCT CTTGCCCGGC GTCAAT   36

(2) INFORMATION FOR SEQ ID NO:17:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 42 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

TATTCTCAGA ATGACTTGGT TAAGTACTCA CCAGTCACAG AA   42

(2) INFORMATION FOR SEQ ID NO:18:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 22 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

TTAACCAAGT CATTCTGAGA AT   22

(2) INFORMATION FOR SEQ ID NO:19:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 36 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

AACGACGAGC GTGACACCAC GACGCCTGTA GCAATG   36

(2) INFORMATION FOR SEQ ID NO:20:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 22 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

TCGTGGTGTC ACGCTCGTCG TT   22

(2) INFORMATION FOR SEQ ID NO:21:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 42 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

TTGCTGATAA ATCTGGAGCC AGTGAGCGTG GGTCTCGCGG TA   42

(2) INFORMATION FOR SEQ ID NO:22:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 21 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

TGGCTCCAGA TTTATCAGCA A   21

(2) INFORMATION FOR SEQ ID NO:23:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 30 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

ATGCTCACTG GCTCCAGATT TATCAGCAAT   30

(2) INFORMATION FOR SEQ ID NO:24:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 36 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

TCTGGAGCCA GTGAGCATGG GTCTCGCGGT ATCATT   36

(2) INFORMATION FOR SEQ ID NO:25:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 70 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

AACCTGTCCT GGCCACCATG GCCTAAATAC AATCAAATAT GTATCCGCTT ATGAGACAAT   60

AACCCTGATA   70

(2) INFORMATION FOR SEQ ID NO:26:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

ATGATTACGC CAAGCTTT   18

(2) INFORMATION FOR SEQ ID NO:27:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 20 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

TTGTCGTCTT TCCAGACGTT   20

(2) INFORMATION FOR SEQ ID NO:28:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 55 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

TTCTGGCTAC ATCTTCACAA CTTATGATAT AGACTGGGTG AGGCAGACGC CTGAA   55

(2) INFORMATION FOR SEQ ID NO:29:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 91 base pairs

(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

ACAGGGACTT GAGTGGATTG GATGGATTTT TCCTGGAGAG GGTGGTACTG AATACAATGA   60

GAAGTTCAAG GGCAGGGCCA CACTGAGTGT A   91

(2) INFORMATION FOR SEQ ID NO:30:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 71 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

TGTCTATTTC TGTGCTAGAG GGGACTACTA TAGGCGCTAC TTTGACTTGT GGGGCCAAGG   60

GACCACGGTC A   71

(2) INFORMATION FOR SEQ ID NO:31:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 72 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

AGAGGGTCAC CATGACCTGC AGTGCCAGCT CAGGTATACG TTACATATAT TGGTACCAAC   60

AGAAGCCTGG AT   72

(2) INFORMATION FOR SEQ ID NO:32:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 63 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

TCCCCCAGAC TCCTGATTTA TGACACATCC AACGTGGCTC CTGGAGTCCC TTTTCGCTTC   60

AGT   63

(2) INFORMATION FOR SEQ ID NO:33:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 68 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

ATGCTGCCAC TTATTACTTG CCAGGAGTGG AGTGGTTATC CGTACACGTT CGGAGGGGGG   60

ACCAAGCT   68

(2) INFORMATION FOR SEQ ID NO:34:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 55 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

TTCTGGCTAC ATCTTCACAG AATTCATCTA GATTTGGGTG AGGCAGACGC CTGAA   55

(2) INFORMATION FOR SEQ ID NO:35:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 91 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: single
           (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

ACAGGGACTT GAGTGGATTG GAATCACAGT CAAGCTTATC CTTTATCTCA GGTCTCGAGT   60

TCCAAGTACT TAAAGGGCCA CACTGAGTGT A   91

(2) INFORMATION FOR SEQ ID NO:36:

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 70 base pairs

(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

TGTCTATTTC TGTGCTAGAT CTTGACTGCA GTCTTATACG AGGATCCATT GGGGCCAAGG   60

GACCAGGTCA   70

(2) INFORMATION FOR SEQ ID NO:37:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 72 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

AGAGGGTCAC CATGACCTGC GGACGTCTTT AAGCGATCGG GCTGATGGCC TGGTACCAAC   60

AGAAGCCTGG AT   72

(2) INFORMATION FOR SEQ ID NO:38:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 63 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

TCCCCCAGAC TCCTGATTTA TTAAGGGAGA TCTAAACAGC TGTTGGTCCC TTTTCGCTTC   60

AGT   63

(2) INFORMATION FOR SEQ ID NO:39:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 67 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

ATGCTGCCAC TTATTACTGC TTCTGCGCGC TTAAAGGATA TCTTCATTTC GGAGGGGGGA   60

CCAAGCT   67

(2) INFORMATION FOR SEQ ID NO:40:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 18 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

AGAATTCATC TAGATTTG   18

(2) INFORMATION FOR SEQ ID NO:41:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 21 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GCTTATCCTT TATCTCAGGT C   21

(2) INFORMATION FOR SEQ ID NO:42:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 21 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

ACTGCAGTCT TATACGAGGA T   21

(2) INFORMATION FOR SEQ ID NO:43:

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 18 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GACGTCTTTA AGCGATCG   18

(2) INFORMATION FOR SEQ ID NO:44:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

TAAGGGAGAT CTAAACAG   18

(2) INFORMATION FOR SEQ ID NO:45:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 18 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

TCTGCGCGCT TAAAGGAT   18

(2) INFORMATION FOR SEQ ID NO:46:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 46 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

TTCTATTGAC GGCCTGTCAG GCCTCATATA TACTTTAGAT TGATTT   46

(2) INFORMATION FOR SEQ ID NO:47:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 56 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

TTGACGCACT GGCCATGGTG GCCAAAAATA AACAAATAGG GGTTCCGCGC ACATTT   56

(2) INFORMATION FOR SEQ ID NO:48:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 45 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

AACTGACCAC GGCCTGACAG GCCGGTCTGA CAGTTACCAA TGCTT   45

(2) INFORMATION FOR SEQ ID NO:49:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 44 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

AACCTGTCCT GGCCACCATG GCCTAAATAC ATTCAAATAT GTAT   44

(2) INFORMATION FOR SEQ ID NO:50:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 23 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

TTCTTAGACG TCAGGTGGCA CTT   23

(2) INFORMATION FOR SEQ ID NO:51:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 21 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

TTTTAAATCA ATCTAAAGTA T   21

(2) INFORMATION FOR SEQ ID NO:52:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 42 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

TGCTCATCCA CGAGTGTGGA GAAGTGGTCC CTGCAACTTT AT   42

(2) INFORMATION FOR SEQ ID NO:53:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 39 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

ACCACTTCTC CACACTCGTG GATGAGCACT TTTAAAGTT   39

(2) INFORMATION FOR SEQ ID NO:54:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 53 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

TGTCACTACC ACACTCGTGG ACTACCATGG CCTAAATACA TTCAAATATG TAT   53

(2) INFORMATION FOR SEQ ID NO:55:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 24 base pairs

(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

TTAAGGGATT TTGGTCATGA GATT   24

(2) INFORMATION FOR SEQ ID NO:56:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 141 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

GTCGACCTCG AGCCATGGCT AACTAATTAA GTAATNNNTA CTGCAGCGTC GTGACTGGGA   60

AAACCCTGGG GTTACCCAAC TTAATCGCCT TGCTGCGCAT CCACCTTTCG CTAGCTGGCG   120

GAATTCCGAA GAANNNGCGC G   141

(2) INFORMATION FOR SEQ ID NO:57:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 141 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

GTCGACCTGC AGGCATGCAA GCTTAGCACT TGCTGTAGTA CTGCAGCGTC GTGACTGGGA   60

AAACCCTGGG GTTACCCAAC TTAATCGCCT TGCTGCGCAT CCACCTTTCG CTAGTTAACT   120

AATTAACTAA GATATCGCGC G   141

(2) INFORMATION FOR SEQ ID NO:58:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 57 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

TCGCCTTGCT GCGCATCCAC CTTTCGCTAG CTGGCGGAAT TCCGAAGAAN NNGCGCG   57

(2) INFORMATION FOR SEQ ID NO:59:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 57 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

TCGCCTTGCT GCGCATCCAC CTTTCGCTAG TTAACTAATT AACTAAGATA TCGCGCG   57

(2) INFORMATION FOR SEQ ID NO:60:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 465 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

ATGGTTCCGA TCCGTCAGCT GCACTACCGT CTGCGTGACG AACAGCAGAA AAGCCTGGTT   60

CTGTCCGACC CGTACGAACT GAAAGCTAGG TGATCTTCTC CATGAGCTTC GTACAAGGTG   120

AACCAAGCAA CGACAAAATC CCGGTGGCTT TGGGTCTGAA AGGTAAAAAC CTGTGACCCT   180

GCAACTCGAG AGCGTGGACC CAAAACAGTA CCCAAAGAAG AAGATGGAGA AGCGTTTCGT   240

CTTCAACAAG ATCGAAGTCA ACCGAACTGG TACATCAGCA CCTCCCAAGC AGAGCACAAG   300

CCTGTCTTCC TGGGNNNTAA CAACTCCGGT CAGGATATCA TCGACTTCCT GCACCTGAAT   360

GGCCAGAACA TCAACCAACA CCTGTCCTGT GTAATGAAAG ACGGCACTCC GAGCAAAGTG   420

GAGTTCGAGT CTGCTGAGTT CACTATGGAA TCTGTGTCTT CCTAA   465

(2) INFORMATION FOR SEQ ID NO:61:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 465 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

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ATGGCACCGG TTAGATCTCT GAACTGCACC CTTCGCGACT CCCAACAGAA AAGCTTAGTA      60

ATGTCTGGTC CGTACGAGCT CAAAGCTAGG TTGTATTCAG CATGAGCTTC GTCCAAGGTG     120

AAGAGTCTAA CGACAAGATC CCAGTTGCAT TAGGCCTGAA AGAGAAGAAT CTGTGACTCT     180

GCAGCTTGAA TCCGTTGACC CGAAAAACTA TCCGAAGAAG AAAATGGAGA AGCGTTTCGT     240

ATTTAACAAG ATTGAGATTA ACCAAACTGG TACATCAGTA CTTCTCAAGC AGAGAATATG     300

CCTGTGTTCC TCGGCGGTAC CAAAGGCGGT CAGGATATCA CTGACTTCCT GCATCTGCAA     360

GGCCAGCACA TGGAACAACA CCTCAGCTGC GTACTGAAAG ACGATAAGCC TAACAAGCTG     420

GAATTCGAGT CTGCTCAGTT CACCATGCAG TTTGTCTCGA GCTAA                      465
```

(2) INFORMATION FOR SEQ ID NO:62:

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5 amino acids
        (B) TYPE: amino acid
        (C) STRANDEDNESS: not relevant
        (D) TOPOLOGY: not relevant

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

    Gly Gly Gly Gly Ser
    1   5